CLOSURE/POST CLOSURE CORRESPONDENCE

PAD980550594

SUNOCO INC (R&M) MARCUS HOOK REFINERY

TSD

RCRA PERMITTING

D

Sun Company, Inc.
PO Box 426
Marcus Hook PA 19061-0426
610 859 1000

March 18, 1996

Mr. Daniel Snowden
Waste Management
Commonwealth of Pennsylvania
Department of Environmental Protection
Southeast Regional Office
Lee Park, Suite 6010
555 North Lane
Conshohocken, PA 19428

Re: **Sun Company Inc. (R&M) Marcus Hook Refinery**
Surface Impoundment Interim Status and Post-Closure Groundwater Monitoring - Annual Report

This report is a summary of the 1995 interim status and post-closure groundwater monitoring activities of the Middle Creek Surface Impoundment. In 1995 there were three sampling events, two semi-annual interim status monitoring events (May 4, 1995 & September 20, 1995) and one post-closure initial background quarterly monitoring event (December 18, 1995). The analytical results and statistical analyses are presented in the attached forms No. ER-WM-91, ER-WM-92, & ER-WM-33 for each well and monitoring event as appropriate. As you requested, the up-gradient Well-78 was replaced by Well-86 in 1995 due to the presence of petroleum hydrocarbons in Well-78. As a result, there is only one 1995 interim status monitoring event for Well-78 (May 4, 1995) and only one interim status initial background monitoring for Well-86 (September 20, 1995).

Closure of the Middle Creek Impoundment was completed according to the PaDEP approved Closure and Post Closure Plan with closure certification by November 29, 1995. On December 18, 1995, Sun performed the first post-closure initial background quarterly sampling of Wells 86, 17, 28, 30, and 40, as detailed in the PaDEP approved "Closure Plan and Post-Closure Plan, Middle Creek Abatement Project, Marcus Hook, Pennsylvania ," dated September 1993.

During 1995, upgradient Well-78 was monitored only in May. Only the TOC result showed a statistically significant increase over the initial background values. This was most likely due to the presence of a sheen in the well and a total petroleum hydrocarbon value of 1000 mg/l. Based on the hydrocarbon presence in the well, Well-78 was replaced by Well-86 as the upgradient monitoring well.

During 1995 Sun began collecting the initial background monitoring data for upgradient Well-86. In September 1995, Sun performed an initial interim background monitoring on Well-86. In December the first post-closure background monitoring for Well-86 was completed. The results for both the September and December monitoring events are presented in the attached ER-WM-33 forms.

Downgradient Well-17 showed no significant change for Total Organic Carbon (TOC) from the original interim status baseline during any of the three sampling events in 1995. During the May 1995 sampling event both the pH and specific conductance results showed a significant change over the initial background, as defined by the Student's T-Test at 0.01 level of significance. These outliers are assumed to be the result of random variability in the monitoring data and not the result of any true change in the groundwater at this location. This assumption is further supported by the September and December samplings where the results were back within the "no significant difference" range for both pH and Specific Conductance.

Well-17 showed variable Total Organic Halide (TOX) results during 1995 with both the May and December results showing a statistical significant increase over the initial background monitoring while the September results were below detection limits and had no significant statistical increase. These outliers also appear to be the result of data variability. The initial set of Well-17 TOX background data had very little variability with a mean of 52.45 and a variance of only 2.65. As a result, TOX values that exceed the initial background average by as little as 4.3 ug/l would result in a statistical significant increase for TOX. 4.3 ug/l is well within the variability of the laboratory TOX test data for we have observed TOX laboratory results of duplicate samples varying by about 7 ug/l with a difference of up to 13 ug/l observed. The Well-17 TOX values in May and December were 7.05 and 9.55 ug/l greater than the initial background mean. Both of these values are within the variability observed for the TOX test. As a result, these outliers are assumed to be the result of random variability in the monitoring data and not the result of any true change in the groundwater at this location.

Well-28, another downgradient well showed no significant increases in 1995 for TOC or TOX. The specific conductance result for the September monitoring showed a statistically significant increase over the initial background monitoring however, the December result was back within the "no significant increase" range. The Well 28-pH values for the 1995 May and September monitoring showed no significant difference over the initial background, however the December result showed a statistically significant decrease over the initial background pH (6.58 as compared to a mean of 7.13) . The December sulfate and nitrate values were compared to the historical and background values and nothing was observed that would indicate a reduction in pH. The pH in Well-28 was tested again in March 1996 and was 7.09, back to within the "no significant difference" range.

Downgradient Well-30 1995 monitoring showed no statistically significant increases for TOC or TOX and no significant differences for pH. However, significant increases as defined by the Student's T-Test were observed for specific conductance during the 1995 September and December monitoring of Well-30. The September specific conductance was higher in September than it was in December. Specific conductance is an indicator of the ions in groundwater and can usually be correlated to the concentration of inorganic ions. Of the various inorganics monitored in September and December only iron was at the higher range of values typically observed for Well-30. If the analytical results for Well-30 specific conductance do not continue to show a decrease during the 1996 monitoring, a plan will be developed to further evaluate Well-30 by sampling additional parameters and/or using other applicable statistical techniques.

Downgradient Well-40 1995 monitoring showed no statistically significant increases or differences for TOC and pH respectively. In addition, although the specific conductance results for May and September were statistically higher than the initial background values, the values continued to decrease during the year and the December specific conductance was back to within the "no significant increase" range. The May TOX result showed a statistically significant increase over the initial background values, however both the September and December Well-40 TOX values were back within the "no significant increase" range.

A comparison of the 1995 groundwater monitoring data to the Maximum Contaminant Levels presented in 25 PA Code 264, Appendix B and 40 CFR 265, Appendix III shows that the Well-28 December Coliform Bacteria value of 25 per 100ml exceed the maximum contaminant level of 1 per 100 ml. In addition, the December Well-30 silver value appears to exceed the 0.05 mg/l maximum contaminant level. However, there is some concern that there may be a laboratory error in the silver value. Two duplicate December Well-30 samples were submitted to the laboratory for silver analysis. One sample was reported as less than the detection limit of 0.05 mg/l, but the duplicate sample was reported as having 0.65 mg/l silver. These two values are considerably further apart than one would normally expect for duplicate samples and indicate a possible lab error. We are currently having the laboratory double check their work on these two samples.

Groundwater elevations measured during 1995 continue to demonstrate that Wells 17, 28, 30, and 40 are hydraulically downgradient from Wells 78 and 86. The two attached 1995 water table gradient maps Figures 1 and 2 shows the 1995 groundwater hydraulic gradients within the refinery.

Sun plans to continue to monitor the above well network according to the PaDEP approved Closure Plan and Post-Closure Plan for the Middle Creek Abatement Project. Additional post-closure background monitoring will occur during each of the first three quarters of 1996 followed by sampling in the fourth quarter 1996 for groundwater indicator as well as site specific parameters.

All future monitoring results will be submitted to your attention with copies to Mr. Stephen Hon Lee of EPA Region III. If you have any questions relating to this information please call me at (610) 859-1959.

Sincerely,
SUN COMPANY, INC. (R&M)

Judy S. Brackin
Sr. Environmental Engineer

Attachment

cc: Mr. Stephen Hon Lee
PA/DE Permit Section
U.S. Environmental Protection Agency
841 Chestnut Building
Philadelphia, PA 19107

Sun Refining and Marketing Company
P O Box 426
Marcus Hook PA 19061-0426

December 9, 1993

Mr. Lawrence Lunsk
Solid Waste Facilities Manager
Commonwealth of Pennsylvania
Department of Environmental Resources
Lee Park, Suite 6010
555 North Lane
Conshohocken, PA 19428

RE: Sun Company, Inc. (R&M)
Marcus Hook Refinery
Middle Creek Conveyance Closure Plan

Dear Mr. Lunsk:

Attached are three sets of revised pages to the closure plan for the Sun Company, Inc. (R&M) Marcus Hook Refinery Middle Creek Conveyance Surface Impoundment. These revised pages were necessary to reflect a slight modification to the cover used in a portion of the conveyance.

The modification was made to eliminate the need to include six inches of soil backfill in zone A-2 where existing conditions sufficiently meet the structural support intended by the soil backfill. The drawings and text have therefore been revised to require backfill only if needed for structural support.

Please contact me at (215) 339-2215 if you have any questions or require any additional information.

Very truly yours,

Charles D. Barksdale Jr., P.E.
Managing Environmental Consultant

Attachments

cc: United States Environmental Protection Agency
841 Chestnut Building
Philadelphia, PA 19107
Attention: Mr. Paul Gotthold